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SERVICE DEPARTMENT/MAGNAVOX CONSUMER ELECTRONICS COMPANY FORT WAYNE, INDIANA 46804

ODYSSEY² (BJ/BK7600) VIDEO GAME SYSTEM



Model BJ/BK7600

GENERAL INFORMATION

The Odyssey 2 (Model BJ/BK7600) is a programmable video game system using integrated circuits. The basic Odyssey 2 system consists of two plug-in Player Hand Controls, a

alpha-numeric Keyboard, Antenna/Game Switch Box. external AC Adapter, and a Game Cartridge.

INSTALLATION INSTRUCTIONS

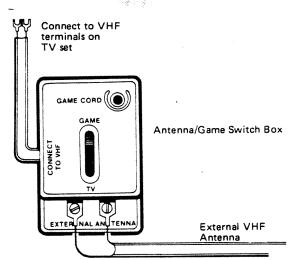


Figure 1

Your Odyssey² will interconnect with any color or black and white television set. All-you need is a flat-head screwdriver.)

1. The Antenna/Game Switch Box (see Figure 1) is provided as a convenience to allow selection of either Odyssey² or regular television viewing, without having to disturb antenna connections.

Locate the VHF antenna terminals on the back of the the television set. Disconnect the VHF antenna leads and reconnect these leads to the terminals on the Antenna/Game Switch box.

Connect the flat twin-lead wire from the Antenna/ Game Switch box to the VHF terminals on the back of your television set.

If your VHF antenna cable is round with a screw-type connector (75 ohm), you will need to purchase a 75 ohm to 300 ohm Balun to permit connection of your TV antenna to the Odyssey² Antenna/Game Switch box.

DMEMP1270

Flectronics Co. 1979

If you are using a 75 ohm round cable, your TV will probably have a set of jumper plates or a switch which must be moved to select the VHF 300 ohm terminals. (See your TV's Owner's Manual for information).

If you have only a UHF antenna, do not disconnect it from your television set. Just connect the flat twinlead wire from the Antenna/Game switch box to the VHF terminals on the back of your television set.

Use the plastic mounting hook supplied to hang the Antenna/Game Switch box from the back of your television set. First insert the hook in the back of the switch box, then insert the end through one of the ventilating holes on the back of your TV.

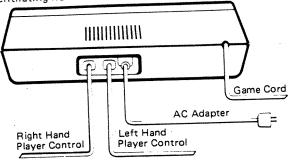
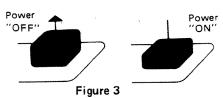


Figure 2

- 2. Plug the Left and Right Player Hand Control Cables into the rear of the console (see Figure 2).
- Plug the GAME CORD from the console into the socket on the top of the Antenna/Game Switch box marked "GAME CORD".



4. Check to make sure that the POWER button on the console is on the OFF position (see Figure 3).

Plug the AC ADAPTOR into any standard 120 volt electrical outlet.

Place the switch on the Antenna/Game switch box to the GAME position.

Set the channel of your TV set to the unused channel (3 or 4) in your area.

Your Odyssey² is normally set at the factory for operation on channel 3 of your television set. If a TV station is transmitting on channel 3 in your area, you can switch your Odyssey² to channel 4 for operation.

This can be accomplished by turning the console over with the cartridge slot facing away from you. Remove the three screws from the bottom of the Console.

Carefully remove the bottom panel of the Console. You will find the channel selector switch in a metal box located to the upper right of the printed circuit at the upper right hand corner of the console. Slide the switch from the channel 3 position to the channel 4 position. Then replace and secure the bottom panel of the Console.

CHECKOUT PROCEDURE

 Visually inspect the Console Unit, Player Hand Control Units, and the AC Adaptor for breakage, cracks, broken or bent connector pins, broken wires, foreign material, corrosion or other damage.

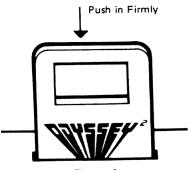


Figure 4

Make sure that the Power button on the console is in the OFF position. This will protect the electronic components of both the console and the cartridge.

Hold the Odyssey² Cartridge so that the label side is facing you and reads right side up. (See Figure 4).

Insert the Cartridge carefully in the cartridge slot on the top of the console. (Note: When you remove the

Cartridge, always make sure that the Power button on the Console is in the OFF position.)

3. Press the Power button on the console to the ON position.

"SELECT GAME" will appear on your TV screen. If it should not appear, press the Reset Key on the Console Keyboard. If "SELECT GAME" still does not appear on the screen, check to make sure the AC Adaptor jack is completely plugged into the console and that the cartridge being used is properly inserted.

The sounds of the game will be coming from the speaker on your TV. Adjust your volume control on the TV to a comfortable level.

If necessary, adjust the fine tuning control on your TV to get the best possible picture.

See the Official Game Rules booklet that accompanies each cartridge for specific game instructions.

(NOTE: When you want to return to regular TV programming, push the Power Button of the console to the OFF position and place the switch on the Antenna/Game switch box to the TV position.

CAUTION: UNDER NO CIRCUMSTANCES ATTEMPT TO MAKE ADJUSTMENTS OF THE RESCULLATOR LOCATED INSIDE THE METAL SHIELD. THESE ARE PRESET AT THE FACTORY IN TEST FIXTURES TO MAGNAVOX STANDARDS, AND STRICT FCC REQUIREMENTS.

BEFORE ATTEMPTING TO MAKE ANY SERVICE ADJUSTMENTS, CHECK ENTIRE BOARD FOR SHORTS OR CRACKS. TOTAL CURRENT DRAIN SHOULD BE MONITORED AT ALL TIMES.

THE 3.58 MHz CLOCK, MICROPROCESSOR CLOCK AND THE VIDEO LEVEL ADJUSTMENTS MAY BE MADE ONLY AFTER IT HAS BEEN DETERMINED THAT IT IS ABSOLUTELY ESSENTIAL.

3.58 MHz Clock Adjustment

Connect a high impedance counter to Pin 1 of IC5 and adjust trimmer C6 for 3,579,545 \pm 50 Hz.

Microprocessor Clock Adjustment

Connect a scope to Pin 2 of IC7 and adjust L2 for maximum amplitude and symmetry.

(NOTE: This adjustment must be made after the 3.58 MHz Clock Adjustment is made).

Video Level Adjustment

Adjust the Video Level control, R4, until a good contrast in the picture is obtained.

IMPORTANT SAFEGUARDS

- DO NOT remove or insert cartridges unless the console is turned OFF.
- Guide the cartridges into the cartridge slot of the console. DO NOT use force.
- Clean exterior parts of the console and cartridges with a soft, slightly damp cloth. DO NOT immerse them into water or spill liquids on them.
- Keep the console, cartridges and Player Hand Controls away from extreme heat.
- Avoid puncturing the keyboard. DO NOT use pencils, penpoints or other sharp objects to press keys.

- Always place the Power button of the console in the OFF position when not in use.
- Only connect the console to a standard AC electrical outlet.
- Always turn OFF your Odyssey² each time you have finished playing the games. Then unplug the AC Adaptor from the 120 volt outlet.

(Note: If you leave the same game pattern on your TV screen for more than 6-8 hours continuously, there is a possibility that the game pattern could be permanently imprinted on the picture tube screen.)

ODYSSEY2 TROUBLESHOOTING

No Game Image on TV

- a. Check the Antenna/Game switch to see if the switch is set in the Game position.
- b. Check to see that the Game Cord is plugged into the Antenna/Game switch box.
- c. Check the connections of the Antenna/Game switch box to the VHF terminals in back of the TV.
- d. The Cartridge may have been inserted when the console was turned On. Place the Power button in the OFF position.
- e. Interference may be caused by a particularly strong broadcast or cable TV station in your area. Disconnect the antenna or cable wire from the Antenna /Game Switch box.

No TV Program Reception

- a. Check the Antenna/Game switch to see if the switch is set in the TV position.
- b. Check the antenna connections to the Antenna/ Game Switch box.

Game Image Weak or Blurry

- a. Check for poor connections at the antenna terminals of the TV set and the Antenna/Game switch box.
- Be sure the fine tuning control of the TV is properly adjusted.
- c. Interference may be caused by a particularly strong broadcast of cable station in your vicinity. Disconnect the antenna or cable wire from the Antenna /Game switch box.

No Game Sounds

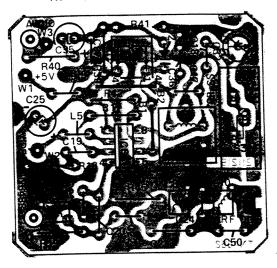
a. Check the volume setting of your TV.

Right or Left Side of Game Area Does Not Appear on Screen

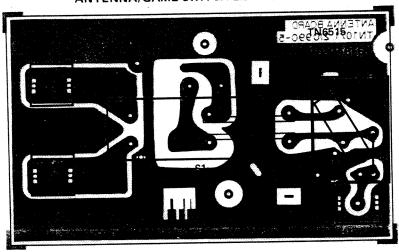
a. Adjust the Horizontal Hold control on your TV.

Player Hand Control Does Not Work

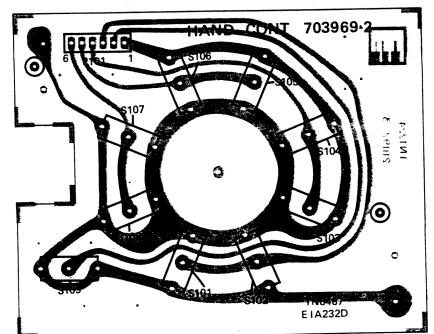
- a. Check to see if the Player Hand Control is properly plugged into the rear of the console.
- b. Defective Player Hand Control.

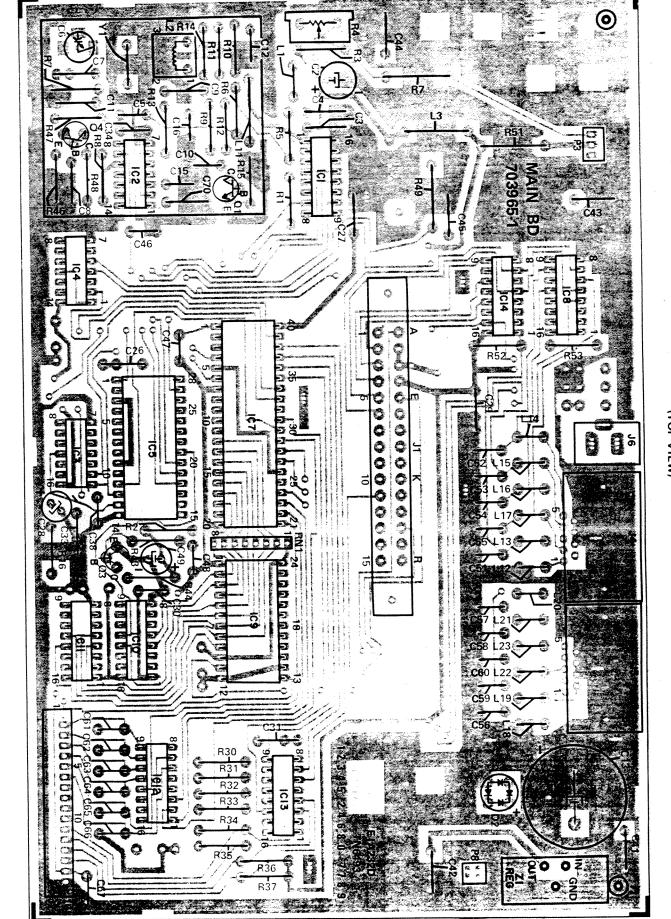


ANTENNA/GAME SWITCH BOX P.C. BOARD

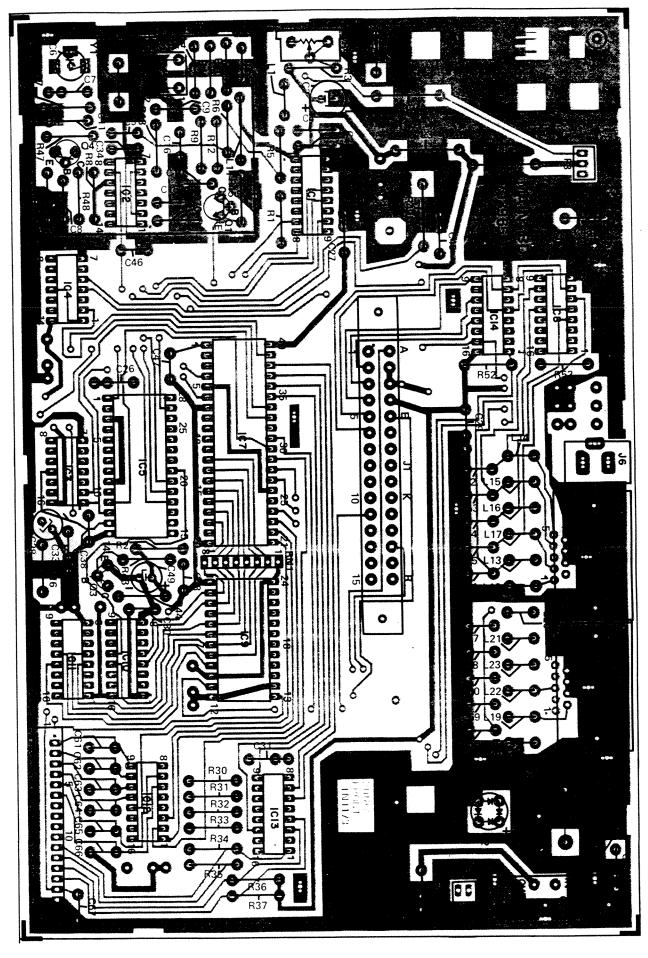


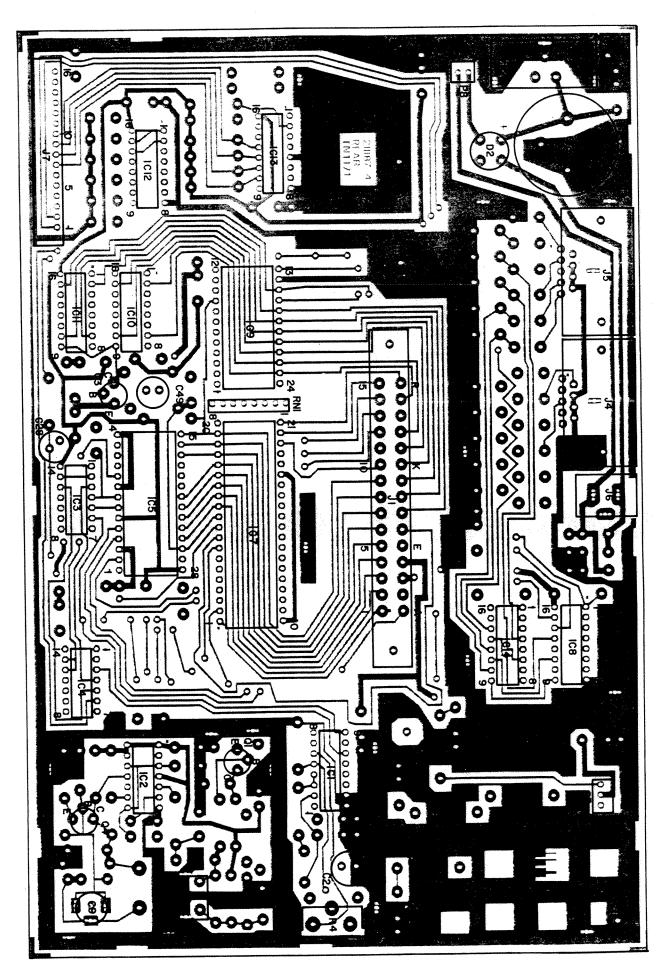
HAND CONTROL P.C. BOARD

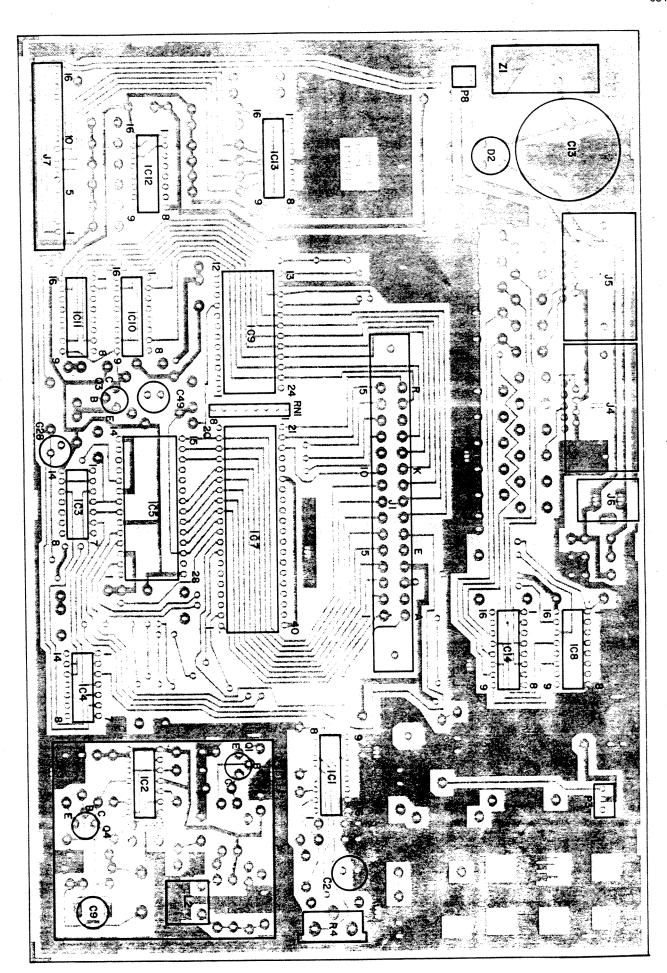




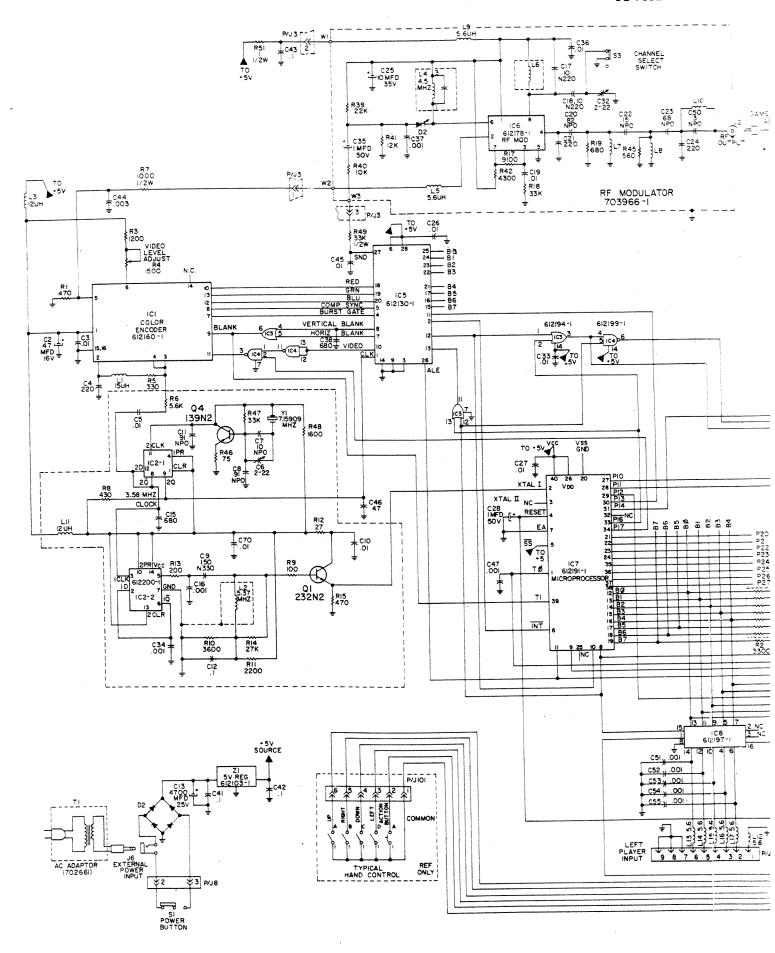
MAIN P.C. BOARD (TOP VIEW)

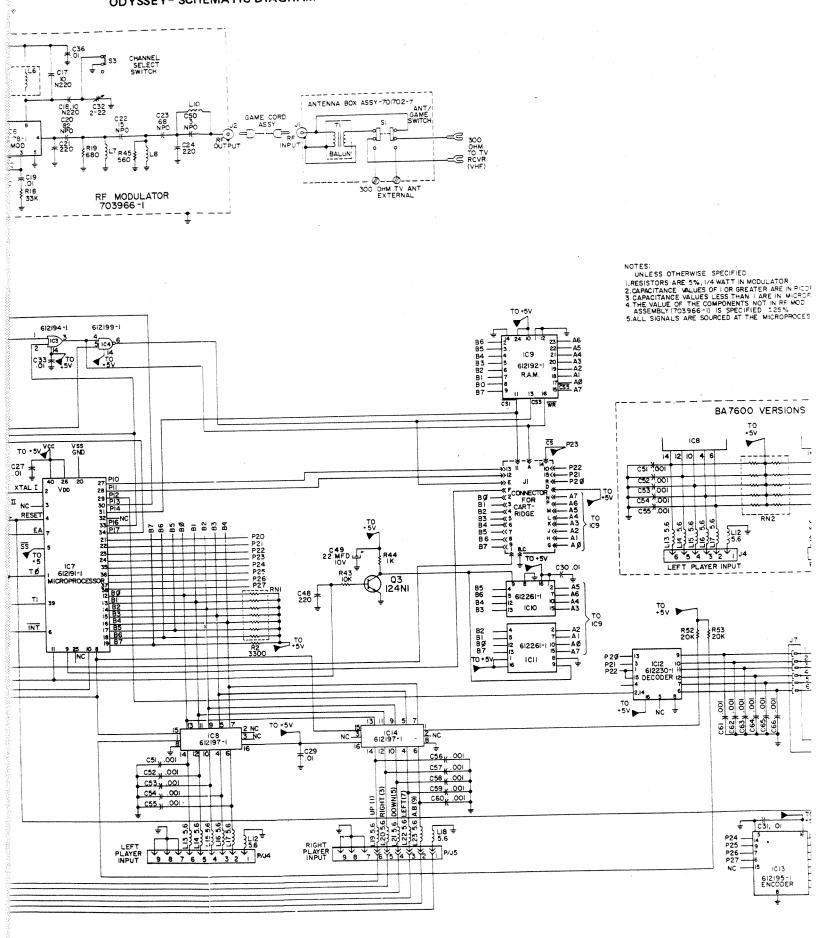


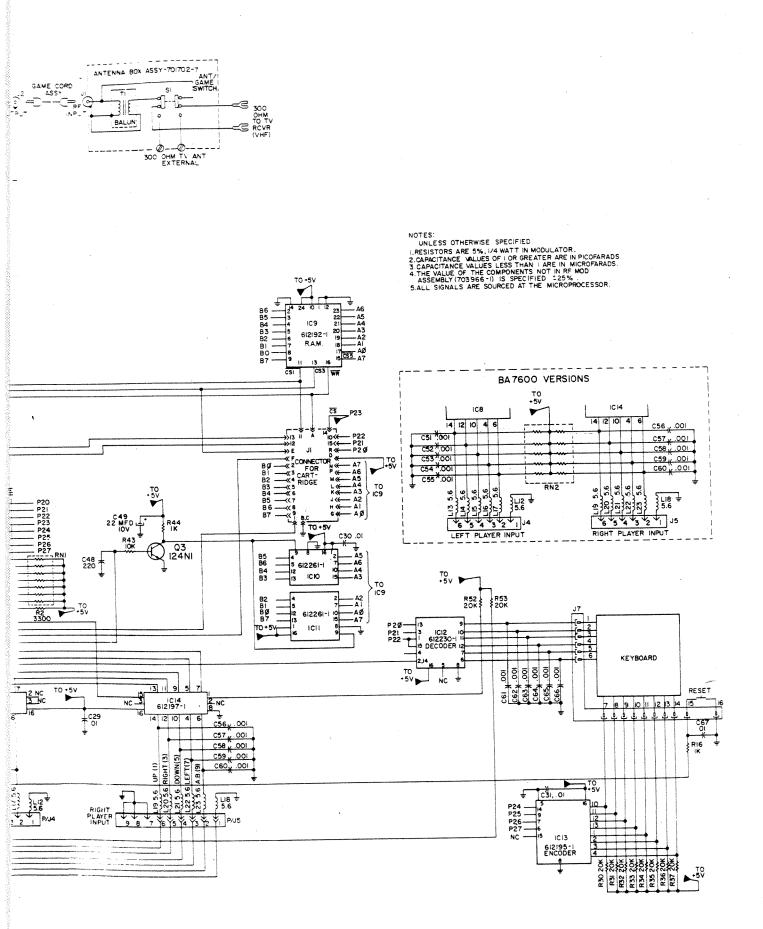




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IMPORTANT

It is against Federal Communications Commission regulations to cause any interference to nearby television sets.

- Please do not use any longer twin-lead wire from the Antenna/Game Switch Box to your TV set than is supplied.
- Please do not make a direct connection from the Antenna/Game Switch Box to any TV antenna or cable TV outlet.
- Do not attach loose wires to your TV antenna terminals when your Odyssey² is turned ON.

703966 "RF MODULATOR" ASSEMBLY REPLACEMENT PARTS LIST

REF.	DESCRIPTION	PART NO.	REF.	DESCRIPTION
L4 L5 L6 L7 L8 L9	COILS 4.5 MHz Coil Peaking Coil, 5.6 uh Coil Filter Coil Filter Coil Peaking Coil, 5.6 uh Filter Coil	361441-2 361444-5690 361398-22 361558-4 361558-4 361444-5690 361558-4	R17 R18 R19 R39 R40 R41 R42 R45	Carbon Film,9.1K oh Carbon Film,33K ohr Carbon Film,680 ohn Carbon Film,12K ohr Carbon Film,10K ohr Carbon Film,12K ohr Carbon Film,4.3K oh Carbon Film,560 ohn
C17 C18 C19 C20 C21 C22 C23 C24 C25 C35 C36 C37 C50	CAPACITORS Ceramic, 10 pf.,5%,500V,N220 Ceramic, 10 pf.,5%,500V,N220 Ceramic, 01 mfd.,+80-20%,100V Ceramic, 82 pf.,5%,500V,NPO Ceramic, 220 pf.,5%,500V Ceramic, 15 pf.,5%,500V,NPO Ceramic, 68 pf.,5%,500V,NPO Ceramic, 220 pf.,5%,500V Electrolytic, 10 mfd.,35V Trimmer, 2-22 pf. Electrolytic, 1 mfd.,50V Ceramic, .01 mfd.,+80-20%,100V Ceramic, .001 mfd.,20%,500V Ceramic, .001 mfd.,20%,500V Ceramic, 3 pf.,±1 pf.,500V,NPO	250666-1005 250666-1005 250660-2009 250546-8205 250551-2215 250546-1505 250546-6805 250551-2215 270109-1135 260220-5 270109-1050 250660-2009 250546-3096	D2 IC6	Channel Select Switch SEMICON Silicon Diode RF Modulator IC MISCELL RF Output Jack 3 Pin Connector Shield (f/L6) RF Module Box Bottom Shield Top Shield

REF.	DESCRIPTION	PART NO.		
R17 R18 R19 R39 R40 R41 R42 R45	Carbon Film,9.1K ohm,5%,½W Carbon Film,33K ohm,5%,½W Carbon Film,680 ohm,5%,½W Carbon Film,22K ohm,5%,½W Carbon Film,10K ohm,5%,½W Carbon Film,12K ohm,5%,½W Carbon Film,4.3K ohm,5%,½W Carbon Film,560 ohm,5%,¼W	230214-9125 230214-3335 230214-6815 230214-2235 230214-1035 230214-1225 230214-4325 230214-5615		
	SWITCHES			
S3	Channel Select Switch	160556-2		
	SEMICONDUCTORS			
D2 IC6	Silicon Diode RF Modulator IC	530104-2 612178-1		
	MISCELLANEOUS			
J2 J3	RF Output Jack 3 Pin Connector Shield (f/L6) RF Module Box Bottom Shield Top Shield	181095-1 181252-3 636734-30 733292-1 733293-6 733293-7		

702669 "CONSOLE" UNIT REPLACEMENT PARTS LIST

REF.	DESCRIPTION	PART NO.
J8 S1	Connector (f/Power Button) Power Button Knob (f/Power Button) Keyboard Cabinet Top Cabinet Bottom Keyboard Frame Case Overlay	181252-2403 160590-3 144132-1 160624-101 144087-1 144088-3 144089-1 151649-1

REF.	DESCRIPTION	PART NO.
	Foot, 4 used Game Cord Assembly —Plug (Inserted into Ant/Game Switch Box) —Plug (Inserted in Console Unit) —Cable AC Adaptor (BJ7600 only) AC Adaptor (BK7600 only)	141737-3 461218-7 180903-1 181235-9 461263-1 702661-1 702661-2

702667 "PLAYER HAND CONTROL" REPLACEMENT PARTS LIST

REF.	DESCRIPTION	PART NO.	REF.	DESCRIPTION	PART NO.
	Case Top Case Bottom Joy Stick Joy Stick Knob Joy Stick Retainer Cover Actuator Plate Action Button Dirt Shield Cable Assembly —9 Pin Housing, J101 —Connector, P4/P5 —Cable Guard —Strain Relief Clip, 2 used —Contacts, 6 used —Contacts, 3 used —Flat Cable	144093-3 144094-1 733300-3 143977-2 143977-2 144082-2 144083-1 144098-1 644395-1 702597-2 181305-1 181252-6 144177-1 103383-1 181306-1 181306-2 461281-4		Hand Control P.C. Board Assembly —6 Pin Wafer Assembly —Momentary Switch Button, 9 used —Momentary Switch, 8 used —Momentary Switch Spring Actuator Pin Spring	703969-2 181253-6 160599-1 160599-6 160599-7 733497-1 733305-1

703965 "MAIN" P.C. BOARD ASSEMBLY REPLACEMENT PARTS LIST

	703965 WAIN F.C. C	CAND AGGENT			
REF.	DESCRIPTION	PART NO.	REF.	DESCRIPTION	PART NO.
	COILS		R13	Carbon Film,200 ohm,5%,¼W	230214-2015
	00120		R14	Carbon Film, 27K ohm, 5%, 4W	230214-2735
, .	Peaking Coil, 15 uh	361475-150	R15	Carbon Film,470 ohm,5%,74W	230214-4715
L1 L2	5.37 MHz Coil	361441-7	R16	Carbon Film,1K ohm,5%,1/4W	230214-1025 230214-2035
L3	RF Choke Coil, 12 uh	360676-25	R30	Carbon Film, 20K ohm, 5%, 4W	230214-2035
L11	RF Choke Coil, 12 uh	360676-25	R31	Carbon Film, 20K ohm, 5%, 4W Carbon Film, 20K ohm, 5%, 4W	230214-2035
L12-23	Peaking Coil, 5.6 uh	361444-5690	R32 R33	Carbon Film 20K ohm, 5%, 4W	230214-2035
ŀ	CAPACITORS		R34	Carbon Film,20K ohm,5%,14W	230214-2035
1	CAPACITORS		R35	Carbon Film, 20K ohm, 5%, 4W	230214-2035
	Electrolytic, 47 mfd., 16V	270109-5115	R36	Carbon Film, 20K ohm, 5%, 1/4W	230214-2035
C2	Ceramic, .01 mfd., +80-20%,100V	250660-2009	R37	Carbon Film, 20K ohm, 5%, 4W	230214-2035
C3 C4	Caramic 220 pf., 5%, 500V	250551-2215	R43	Carbon Film, 10K ohm, 5%, ¼W	230214-1035 230214-1025
C5	Ceramic, .01 mfd.,+80-20%,100V	250660-2009	R44	Carbon Film,1K ohm,5%,¼W Carbon Film,75 ohm,5%,¼W	230214-7505
C6	Trimmer 2-22 pf.	260220-5 250546-1009	R46 R47	Carbon Film,33K ohm,5%,¼W	230214-3335
C7	Caramic 10 of 10%, 500 V, NPO	250546-9105	R48	Carbon Film, 1.6K ohm, 5%, 1/4W	230214-1625
C8	Ceramic, 91 pf.,5%,500V,NPO Ceramic, 150 pf.,10%,500V,N330	250528-1519	R49	Carbon Film,33K ohm,5%,½W	230212-3335
C9	Ceramic, 150 pt., 10%, 500 V, 100 V Ceramic, .01 mfd., +80-20%, 100 V	250660-2009	R51	Carbon Film,1 ohm,10%,1/2W	230212-1095
C10	Ceramic, 91 pf.,5%,500V,NPO	250546-9105	R52	Carbon Film, 20K ohm, 5%, 4W	230214-2035
C11	Mylar, .1 mfd.,10%,50V	250642-1049	R53	Carbon Film,20K ohm,5%,¼W	230214-2035
C12 C13	Electrolytic, 4700 mfd.,25V	270132-5	İ	`	
C15	Ceramic, 680 pf.,20%,500V	250551-6810		CONTROLS	
C16	L Mica 1000 of 10%, 100V	250607-6973	1	1500 chm	220299-1522
C26	Ceramic .01 mfd.,+80-20%,100V	250660-2009 250660-2009	R4	Video Level Adjust, 1500 ohm	220299-1522
C27	Ceramic, .01 mfd.,+80-20%,100V	270109-1050	[SEMICONDUCTORS	
C28	Electrolytic, 1 mfd.,50V Ceramic, .01 mfd.,+80-20%,100V	250660-2009		SEMICOMBOCIONS	1
C29	Ceramic, .01 mfd.,+80-20%,100V	250660-2009	Q1	NPN Silicon	610232-2
C30	L Caramic .01 mfd.,+80-20%,100V	250660-2009	03	NPN, Silicon	610124-1
C31 C33	Ceramic .01 mfd+80-20%,100V	250660-2009	04	NPN, Silicon	610139-2
C34	Ceramic, 1000 pf.,20%,500V	250551-1020	D2	Bridge Rectifier	530204-1
C38	Ceramic, 680 pf., 20%, 500 V	250551-6810	Z1	Regulator, 5 Volt	612103-3
C41	Polyester, .1 mfd.,20%,100V	250555-184 250555-184	Y1	Crystal	560404-3 612160-3
C42	Polyester, .1 mfd.,20%,100V	250555-184	IC1	Color Encoder IC Dual D-Type Positive-Edge-Triggered	0121000
C43	Polyester, .1 mfd., 20%, 100V	250551-3025	1C2	IC	612200-1
C44	Ceramic, 3000 pf.,5%,500V Ceramic, .01 mfd.,+80-20%,100V	250660-2009	ісз	Quad 2 Input Positive or Gate	
C45 C46	L Ceramic, 47 pf.,10%,500V	250551-4709	1 103	IC	612194-1
C47	Ceramic, 1000 pf.,20%,500V	250551-1020	1C4	Quad 2 Input Positive IC	612199-1
C48	Ceramic, 220 pf., 10%, 500V	250551-2219	IC5	Graphics Display IC	612130-1
C49	Electrolytic, 22 mfd.,10V	270109-2110	1C7	Microprocessor IC	612191-1 612197-1
C51	Ceramic, 1000 pf.,20%,500V	250551-1020	IC8	Gated Input IC	612192-1
C52	Ceramic, 1000 pf.,20%,500V Ceramic, 1000 pf.,20%,500V	250551-1020	IC9	R.A.M. IC Quad Positive-Edge-Triggered D	0.2.32
C53	Ceramic, 1000 pf.,20%,500V	250551-1020	IC10	Type IC	612261-1
C54 C55	Ceramic, 1000 pf., 20%, 500V	250551-1020	1011	Quad Positive-Edge-Triggered D	1
C56	Ceramic, 1000 pf.,20%,500V	250551-1020	1011	Type IC	612261-1
C57	Ceramic, 1000 pf.,20%,500V	250551-1020	IC12	Decoder IC	612230-1
C58	Ceramic, 1000 pf.,20%,500V	250551-1020	IC13	Encoder IC	612195-1
C59	Ceramic, 1000 pf., 20%, 500V	250551-1020 250551-1020	IC14	Gated Input IC	612197-1
C60	Ceramic, 1000 pf.,20%,500V	250551-1020		MIGORILLANIEGUE	1
C61	Ceramic, 1000 pf.,20%,500V Ceramic, 1000 pf.,20%,500V	250551-1020		MISCELLANEOUS	
C62	Ceramic, 1000 pf.,20%,500V	250551-1020		Cartridge Connector	181257-1
C63 C64	Ceramic, 1000 pf.,20%,500V	250551-1020	J1 J4	Left Player Input Plug,9-Pin	
C65	Ceramic, 1000 pf.,20%,500V	250551-1020	J.4	(BJ7600 only)	181307-1
C66	Coromic 1000 of 20% 500V	250551-1020	J4	Left Player Input Plug, 9-Pin	
C67	Ceramic .01 mfd.,+80-20%,100V	250660-2009	• •	1 (BK7600 only)	181307-3
C70	Ceramic, .01 mfd.,+80-20%,100V	250660-2009	J5	Right Player Input Plug, 9-Pin	181307-1
	550,050,050		1 1	(BJ7600 only)	181307-1
1	RESISTORS	1	J5	Right Player Input Plug, 9-Pin (BK7600 only)	181307-3
	Barinan Network	254003-3325	!	AC Adaptor Input Jack (BJ7600 only	
RN1	Resistor Network Carbon Film,470 ohm,5%,%W	230214-4715	16 16	AC Adaptor Input Jack	1
R1 R2	Carbon Film,3.3K ohm,5%,¼W	230214-3325	1 30	(BK7600 only)	181328-1
R3	Carbon Film, 1.2K ohm, 5%, 4W	230214-1225	J7	Keyboard Connector	181309-2
R5	Carbon Film.330 ohm.5%, 4W	230214-3315	P3	3-Pin Wafer Assembly	181254-3 181254-2
R6	Carbon Film, 5.6K ohm, 5%, W	230214-5625	P8	2-Pin Wafer Assembly	181214-1
R7	Carbon Film, 1K ohm, 5%, ½W	230212-1025 230214-4315	1 1	IC Socket (f/IC5)	181214-2
R8	Carbon Film,430 ohm,5%,¼W	230214-4315		IC Socket (f/IC7) Heat Sink (f/Z1)	733539-1
R9	Carbon Film,100 ohm,5%,¼W Carbon Film,3.6K ohm,5%,¼W	230214-3625	1 1	Heat Sink (1/21)	733540-1
R10	Carbon Film,3.8K ohm,5%,74W	230214-2225		Shorting Clip	733683-1
R11 R12	Carbon Film,27 ohm,5%,¼W	230214-2705			
n 12					

701702-7 "ANTENNA/GAME SWITCH BOX" ASSEMBLY REPLACEMENT PARTS LIST

REF.	DESCRIPTION	PART NO.
	Antenna Box Bottom Antenna Box Top Plastic Hook Antenna Unit —Antenna/Game Switch, S1 —Game Cord Socket, J1 —Balun Antenna, T1 —Terminal (2 used) —Cable Assembly, Twin Lead —Solderless Terminal, 2 used (f/782237) —300 ohm wire (f/782237) —Antenna Board Shield	143674-1 143676-1 143719-1 703748-6 160499-3 180902-4 361108-2 200495-1 782237-2 200517-1 461144-1 733573-1